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Cinetorhynchus hawaiiensis, a New Shrimp Forming a Cryptic Species Pair with *C. reticulatus* Okuno, 1997, and New Records of Three Congeneric Species (Crustacea: Decapoda: Rhynchocinetidae)

Junji Okuno[1] and John P. Hoover[2]

[1] Natural History Museum and Institute, Chiba
955–2 Aoba-cho, Chuo-ku, Chiba 260–8682 Japan
[2] Hawaii Medical Library
1221 Punchbowl Street, Honolulu, HI 96813, U. S. A.

Abstract A rhynchocinetid shrimp, *Cinetorhynchus hawaiiensis* sp. nov., is described and illustrated on the basis of two male and two female specimens (one ovigerous) from the Hawaiian Islands. This new species closely resembles the more widespread *Cinetorhynchus reticulatus* Okuno, 1997, differing only in details of color pattern and two minor morphological characters. The two form a cryptic species pair. Range extensions are confirmed for *C. concolor* (Okuno, 1994), *C. hendersoni* (Kemp, 1925) and *C. reticulatus*.

Key words: Crustacea, Decapoda, Rhynchocinetidae, *Cinetorhynchus*, new species, cryptic species, new records, Indo-West Pacific.

The rhynchocinetid genus *Cinetorhynchus* Holthuis, 1995, is characterized by indistinct rostral articulation, three spines on the median carina of carapace, no supraorbital spine, fifth abdominal somite armed with an acute spine posterolaterally, and two rows of spines on the ischia and meri of the ambulatory pereiopods. Okuno (1997) reviewed the Indo-Pacific species and recognized six species. While this revision was in press, Okuno (1996) described *C. manningi*, the second *Cinetorhynchus* species from the Atlantic, as new to science. Very recently, Okuno and Tachikawa (1997) proposed *C. fasciatus* as a new species from the western and central Pacific. The living color patterns of all Indo-Pacific members of the genus are known and have proved reliable for species identification (Okuno, 1997).

In June–July 1995 and June 1997, one of us (JPH) made collections of an unfamiliar *Cinetorhynchus* off the Hawaiian Islands of Hawai'i and O'ahu with scuba equipment at night. Coloration in life clearly distinguishes the species in question from its congeners. We consider it to form a cryptic species pair (cf. Knowlton, 1986) with the more widespread *C. reticulatus* Okuno, 1997 and describe it herein as new.

Other rhynchocinetid shrimps collected at night about the islands of Hawai'i and O'ahu by JPH and diving companions between 1994 and 1997 include *C. concolor* (Okuno, 1994)—a new record to the Hawaiian Islands—as well as the type and other specimens of *Rhynchocinetes rathbunae* Okuno, 1996. Moreover, through the courtesy of Drs. C. H. J. M. Fransen and L. B. Holthuis, one of us (JO) was able to examine several rhynchocinetid specimens from Sulawesi, Indonesia and the northern Red Sea. The first occurrences of *C. hendersoni* and *C. reticulatus* from these areas were recognized.

Materials and Methods

Specimens of *C. hawaiiensis* were fixed by 10% salt-water formalin, and preserved in 50% ethylene glycol during examination. Later, they were preserved in 70% ethanol. The type series are housed in the Bernice P. Bishop Museum, Honolulu (BPBM) and the Natural History Museum and Institute, Chiba (CBM). Other institutional names are abbreviated as follows: the Nationaal Natuur-

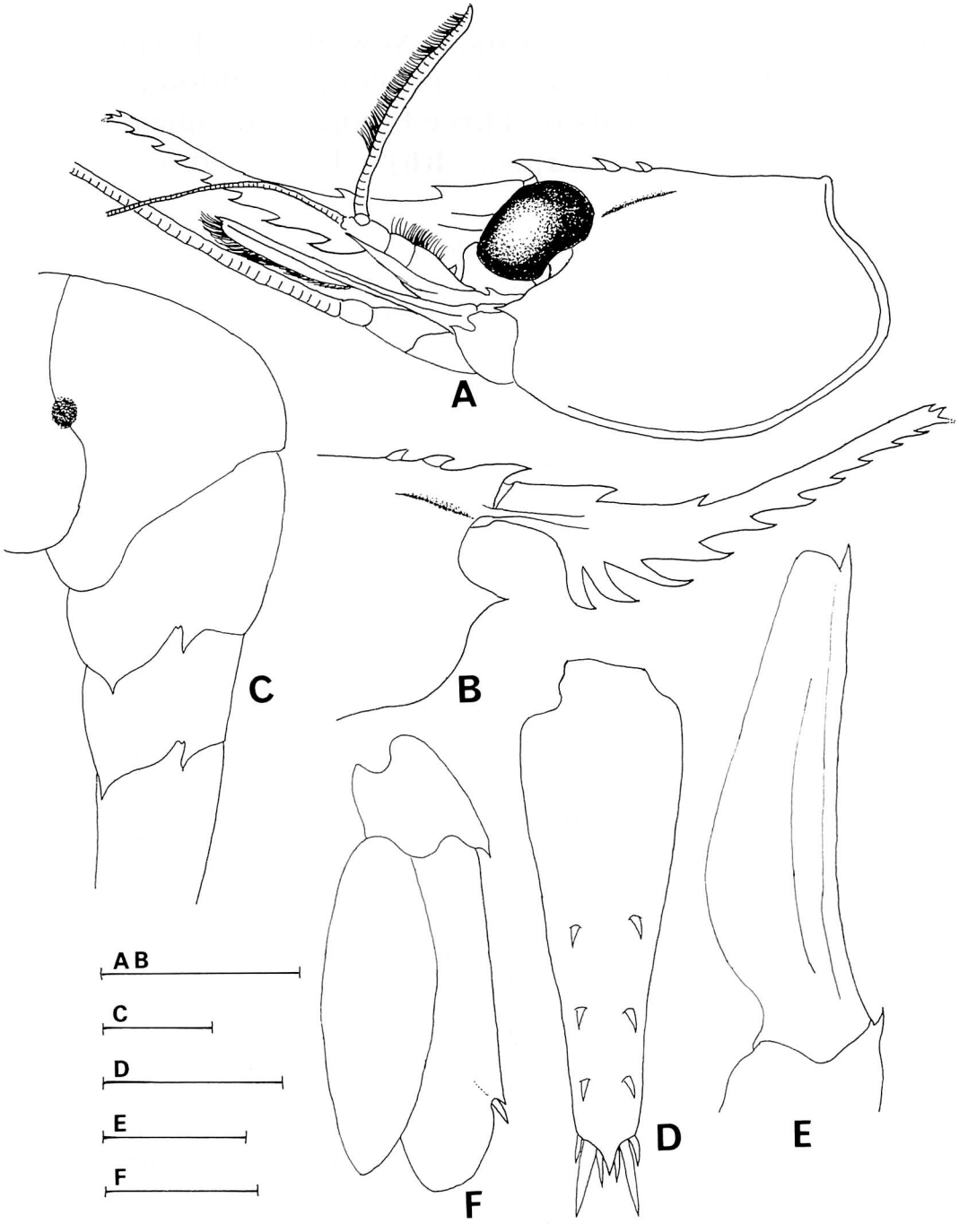

Fig. 1. *Cinetorhynchus hawaiiensis* sp. nov., holotype male (BPBM S11356, 6.6 mm CL). A, carapace and cephalic appendages, left aspect; B, anterior part of carapace with rostrum, right aspect; C, third to fifth abdominal somites, left aspect; D, telson, dorsal aspect; E, right scaphocerite, dorsal aspect; F, right uropod, dorsal aspect. Marginal setae omitted on E, F. Scales, A, B=5 mm; E–F=2 mm.

Table 1. Branchial formura in *Cinetorhynchus hawaiiensis* sp. nov.

	Maxillipeds			Pereiopods				
	I	II	III	I	II	III	IV	V
Pleurobranchs	—	—	—	1	1	1	1	1
Arthrobranchs	—	—	2	1	1	1	—	—
Podobranchs	—	1	—	—	—	—	—	—
Epipods	1	1	1	1	1	1	1	—
Exopods	1	1	1	—	—	—	—	—

historisch Museum, Leiden (RMNH); the National Science Museum, Tokyo (NSMT). The method of measuring and other comparative materials follow Okuno (1997). Postorbital carapace length is abbreviated as CL.

Systematics

Rhynchocinetidae Ortmann, 1890

Cinetorhynchus Holthuis, 1995

Cinetorhynchus hawaiiensis sp. nov.

(Figs. 1–3, 4A, B, 5A)

Material examined. Hawaiian Islands. Male (holotype, BPBM S 11356, 6.6 mm CL), 19°39.0′ N, 156° 00.0′ W, Kailua Harbor, Hawai'i, 8 m depth, July 10, 1995, coll. J. P. Hoover; 1 male (paratype, CBM-ZC 3693, 6.1 mm CL) and 1 ovigerous female (paratype, BPBM S 11357, 5.4 mm CL), 21°28.0′ N, 158°13.0′ W, Makaha, O'ahu, June 22, 1995, 4 m depth, coll. J. P. Hoover and J. Earle; 1 female (paratype, CBM-ZC 3694, 4.3 mm CL), same locality as other paratypes, June 21, 1997, 5 m depth, coll. D. Dickey and J. P. Hoover.

Diagnosis. A rather robust rhynchocinetid shrimp of subcylindrical body form. The following combination of characters distinguish *C. hawaiiensis* from all other congeners: Pleura of fourth and fifth abdominal somites posteroventrally acute; stylocerite of antennular peduncle reaching level of base of upper antennular flagellum; distolateral spine of scaphocerite overreaching tip of lamella; ambulatory pereiopods with dactyli armed medially with three accessory cornified spines posterior to the largest terminal unguis; carpi of the third and fourth pereiopods armed with three spines; third pereiopod falling slightly short of tip of scaphocerite.

Description. Carapace (Fig. 1A) with numerous fine transverse striae. Three acute teeth on dorsal carina behind rostral articulation, anterior tooth largest, the posterior two teeth appearing to be articulated. Antennal spine acutely pointed, exceeding anterior margin of carapace; pterygostomian angle unarmed or armed with a small spine.

Rostrum (Fig. 1B) well developed, articulated with carapace, slightly upturned distally, length 1.59–1.70 times as long as carapace; lateral carina distinct, continuous with upper orbital margin; dorsal margin armed with two large teeth proximally, two small teeth subterminally; ventral margin armed with 9–10 teeth decreasing regularly in size distally.

Abdominal somites (Fig. 1C) also with numerous fine transverse striae; pleura of first three somites rounded; posteroventral angle of fourth somite armed with distinct protrusion; fifth somite with acute protrusion posteroventrally; fourth and fifth somites posterolaterally acute; sixth somite slightly compressed, 0.49–0.61 times as long as carapace, with sharply pointed spine posteroventrally, with anal spine between uropodal protopadites. Telson (Fig. 1D) 0.64–0.76 times as long as carapace, 1.15–1.34 times as long as sixth abdominal somite, slightly convex dorsally; dorsal surface with three pairs of small spines; midpoint of posterior margin distinctly produced posteriorly, with three pairs of posterior spines.

Eye (Fig. 1A) with cornea pigmented, much broader than eyestalk.

Antennular peduncle (Fig. 5A) falling slightly short of level of midlength of rostrum; surface proximal segment concave, armed ventrally with an acute tooth at medial margin, distolateral spine pointed terminally; stylocerite reaching level of base of upper flagellum, tapering, with pointed distal end; statocyst oval, longitudinal; thickened

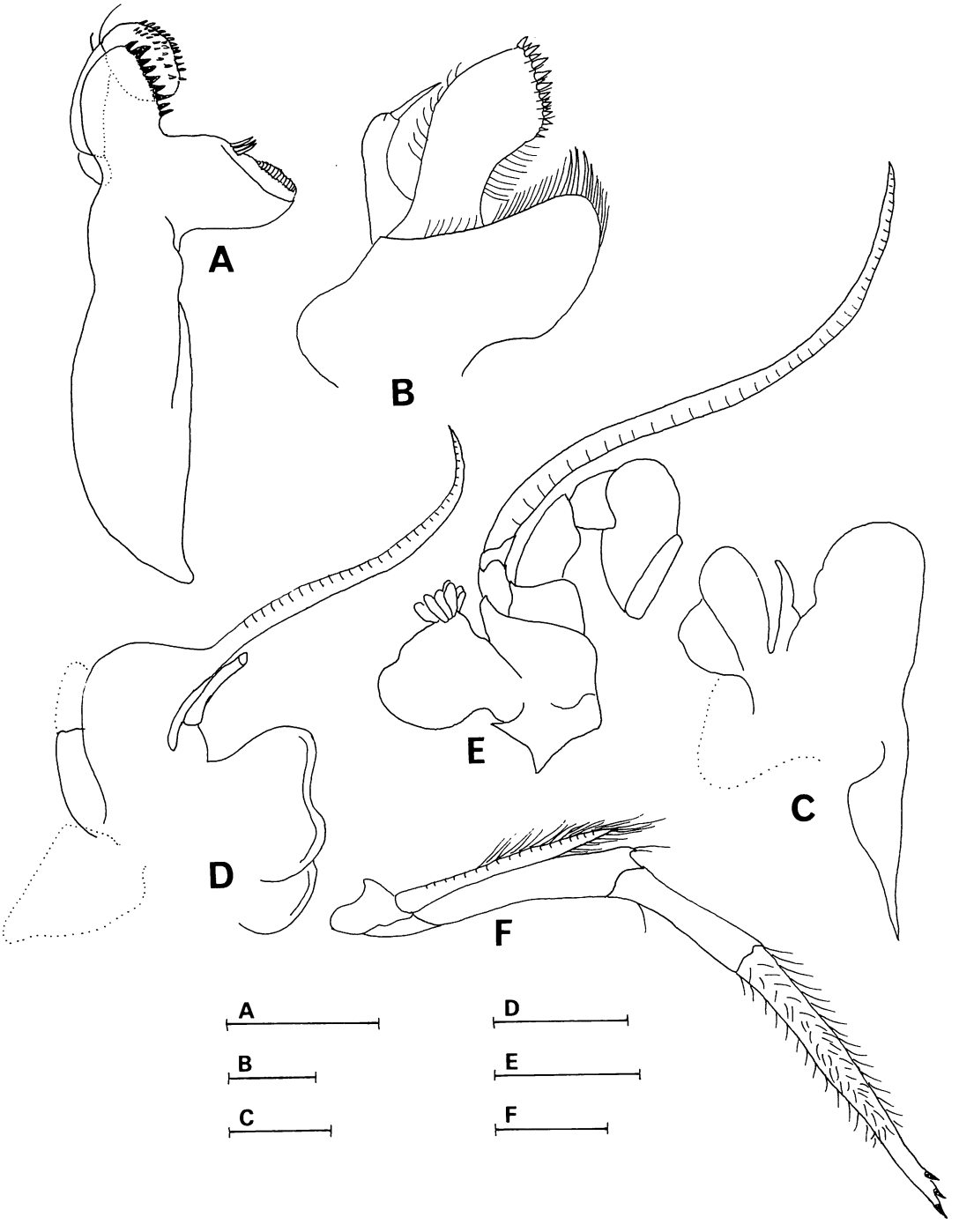

Fig. 2. *Cinetorhynchus hawaiiensis* sp. nov., holotype male (BPBM S11356, 6.6 mm CL). A, right mandible; B, right first maxilla; C, right second maxilla; D, right first maxilliped; E, right second maxilliped; F, right third maxilliped. Setae omitted on C–E. Scales: A, C–E = 1 mm; B = 0.5 mm; F = 2 mm.

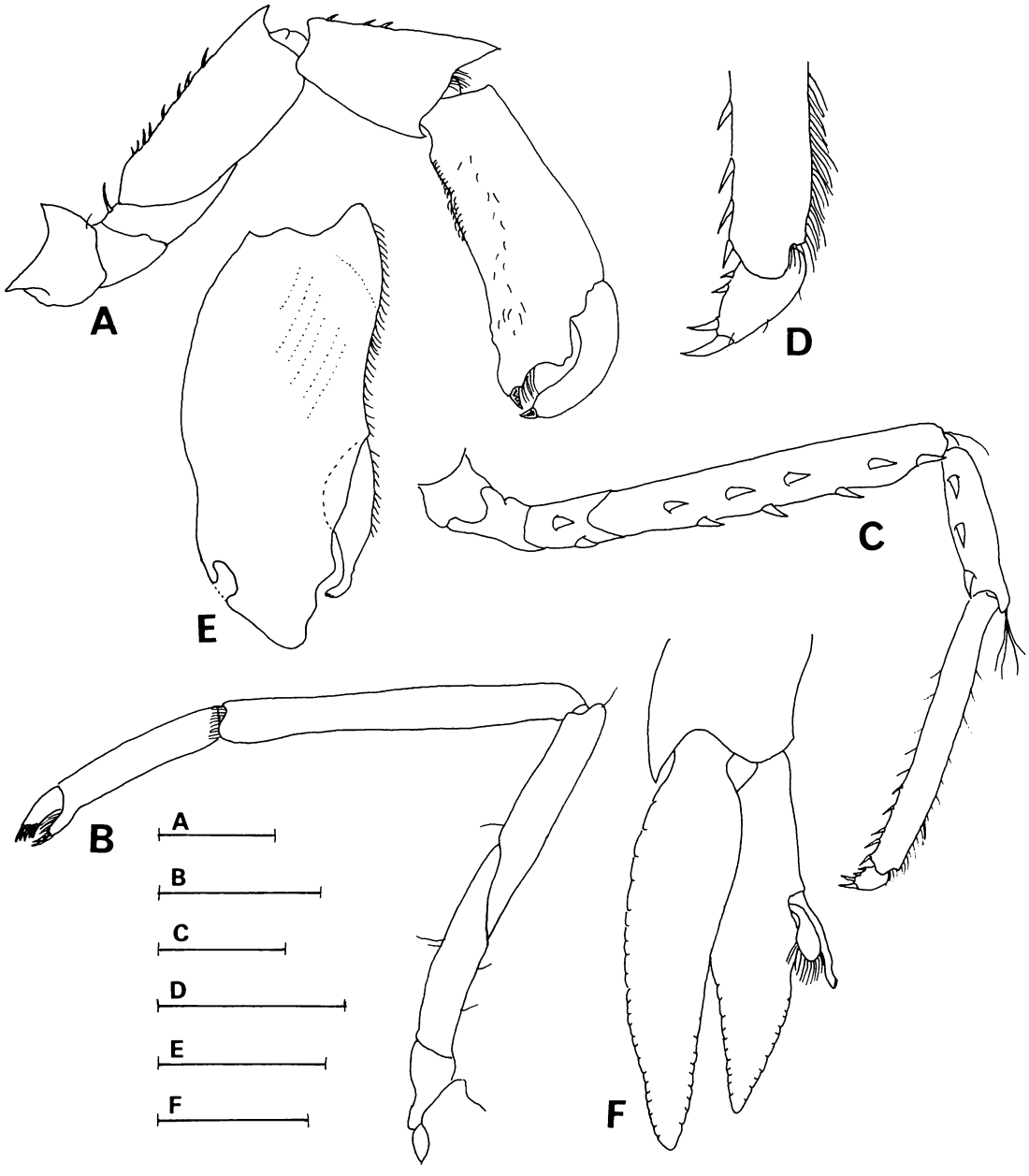

Fig. 3. *Cinetorhynchus hawaiiensis* sp. nov., holotype male (BPBM S11356, 6.6 mm CL). A, right first pereiopod; B, left second pereiopod; C, right third pereiopod; D, same, dactylus; E, right endopod of first pleopod; F, right second pleopod. Marginal setae omitted on F. Scales, A–C = 2 mm; D–F = 1 mm.

part of upper flagellum falling slightly short of level of rostral distal dorsal tooth.

Antenna with scaphocerite (Fig. 1E) well developed, reaching level of distal third of rostrum, 0.95–1.05 times as long as carapace, 3.06–3.22 times as long as maximum width, distolateral spine acutely pointed, overreaching distal margin of lamella; basicerite with fine transverse striae, armed marginally with a strongly pointed tooth and rounded lobe just above spine; carpocerite reaching level of proximal third of scaphocerite.

The branchial formula is shown as Table 1.

Mandible (Fig. 2A) with three-segmented

palp, distal segment rounded distally, with short dense setae, intermediate segment longest of all, distal margin with long sparse setae; incisor process stout, with sharp distal teeth; molar process subcylindrical, broad, with feeble distal setae and numerous corneous slits.

First maxilla (Fig. 2B) with feebly bifid slender palp, with long denticulate seta distally; distal lacinia broad, lateral margin convex, with sparse setae, distal margin straight, with 2 rows of small, stout spinules; proximal lacinia broader than distal lacinia, feebly quadrate distally.

Second maxilla (Fig. 2C) with distinct palp, proximally broad, distally slender; coxal endite broad, distal margin truncate, with numerous long setae distally; distal endite bilobed, upper lobe feebly quadrate distally, broader than lower lobe, with dense setae distally, lower lobe with rather straight distal margin, with dense setae; scaphognathite well developed, anterior lobe with feebly quadrate distal end, posterior lobe very slender, inner margin convex, elongated posteriorly.

First maxilliped (Fig. 2D) with elongate, 3-segmented palp, intermediate segment longest of all, distal segment very small, distal endite expanded distally, broader than proximal endite, with distal margin with dense setae; proximal endite rounded, with dense setae distally; exopod well developed, caridean lobe large, flagellum with numerous setae distally; epipod large, triangular, bilobed.

Second maxilliped (Fig. 2E) with small, feebly developed oval epipod having well developed podobranch; distal margin of dactylus almost straight, with long dense setae; propodus with distal margin rounded, inner margin feebly expanded.

Third maxilliped (Fig. 2F) reaching distal third of scaphocerite; antepenultimate segment with acute spine distolaterally; penultimate segment 0.38–0.41 times as long as carapace, with sparse setae on outer surface; ultimate segment 0.64–0.77 times as long as carapace, 1.56–2.04 times as long as penultimate segment, with 6–8 dark cornified spines at apex, covered uniformly with dense setae except distal fourth.

First pereiopod (Fig. 3A) sexually dimorphic. In largest male holotype, first pereiopod slightly overreaching distal margin of scaphocerite, subchelate; chela 0.79 times as long as carapace, 2.08 times as carpus. In paratypes, this pereiopod falling slightly short of level of midlength of scaphocerite; chela 0.43–0.53 times as long as carapace, 1.44–1.86 times as long as carpus.

Second pereiopod (Fig. 3B) slightly overreaching level of midlength of scaphocerite; chela 0.33–0.39 times as long as carapace, armed terminally with dark cornified spines slightly curved inferiorly; carpus 0.52–0.62 times as long as carapace, 1.56–1.69 times as long as chela.

Ambulatory pereiopods slender. Propodi with sparse spinules on ventral margin, dense short setae distally. Dactyli (Fig. 3D) armed medially with three cornified spines posterior to largest terminal unguis, decreasing regularly in size proximally. Third pereiopod (Fig. 3C) falling slightly short of tip of scaphocerite; ischium armed with spine on lateral surface and ventral margin; merus 0.67–0.88 times as long as carapace, 2.00–2.52 times as long as carpus, armed laterally with five spines, ventrally with three spines; carpus 0.30–0.37 times as long as carapace, armed with three spines; propodus 0.61–0.71 times as long as carapace, 1.65–2.04 times as long as carpus. Fourth pereiopod slightly overreaching level of midlength of scaphocerite; spinations of ischium, merus and carpus agreeing those of third pereiopod; merus 0.69–0.74 times as long as carapace, 1.96–2.33 times as long as carpus; proportion of carpus resembling that of third pereiopod; propodus 0.61–0.68 times as long as carapace, 1.80–2.06 times as long as carpus. Fifth pereiopod reaching level of proximal third of scaphocerite; ischium with or without spine on lateral surface and ventral margin; merus 0.59–0.64 times as long as carapace, 1.75–2.12 times as long as carpus, armed laterally with three spines, ventral margin with or without one to two spines; carpus 0.28–0.36 times as long as carapace, armed with two spines; propodus 0.61–0.70 times as long as carapace, 1.92-2.18 times as long as carpus.

Male first pleopod (Fig. 3E) with endopod rounded distally; appendix interna well de-

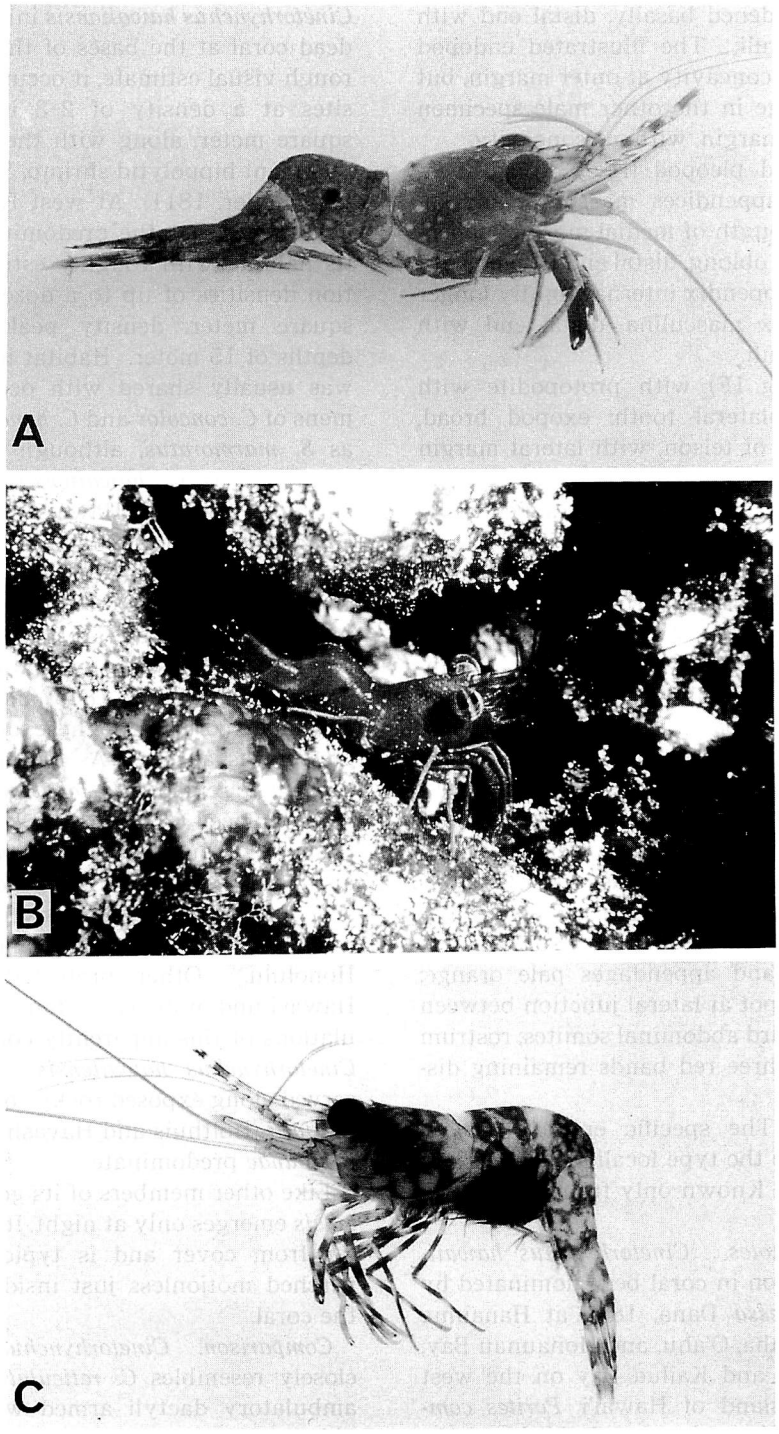

Fig. 4. Coloration of *Cinetorhynchus hawaiiensis* sp. nov. (A, B) and *C. reticulatus* (C). A, paratype male (CBM-ZC 3693, 6.1 mm CL), fresh specimen, lateral view (photo by J. P. Hoover); B, alive in field, specimen not collected (photo by J. P. Hoover); C, paratype ovigerous female (NSMT-Cr 2625, 10.0 mm CL), fresh specimen, lateral view (photo by J. Okuno).

veloped, broadened basally, distal end with dense cincinnuli. The illustrated endopod has a distinct concavity at outer margin, but this appendage in the other male specimen forms entire margin, without concavity.

Male second pleopod (Fig. 3F) with endopod with appendices masculina and interna at midlength of medial margin; appendix masculina oblong, distal end fringed with dense setae; appendix interna slightly longer than appendix masculina, distal end with dense cincinnuli.

Uropod (Fig. 1F) with protopodite with acute posterolateral tooth; exopod broad, exceeding tip of telson, with lateral margin straight, with acute articulated spine medial to distolateral spine; endopod subequal to exopod.

Coloration. In fresh specimen (Figs. 4A, B), carapace and abdominal somites deep red to orange-yellow covered with small, ocellated blue-white spots of various sizes and intensities; spots usually indistinct in dark red specimens; carapace often conspicuously lighter than abdomen, producing a bicolor appearance; a distinct dark spot always present on lateral junction between second and third abdominal somites; rostrum pinkish transparent, with three transverse red bands from apex to midlength. In liquid 50% ethylene glycol, carapace pinkish white; abdominal somites and appendages pale orange; dark orange spot at lateral junction between second and third abdominal somites; rostrum transparent, three red bands remaining distinctly.

Etymology. The specific epithet, *hawaiiensis*, refers to the type locality.

Distribution. Known only from the Hawaiian Islands.

Ecological notes. *Cinetorhynchus hawaiiensis* is common in coral beds dominated by *Porites compressa* Dana, 1846 at Hanauma Bay and Makaha, O'ahu, and Honaunau Bay, Keauhou Bay and Kailua Bay on the west side of the island of Hawai'i. *Porites compressa*, one of Hawaii's most abundant corals, is a low, branching, finger-like species possibly endemic to the islands (Maragos, 1977; Jokiel, 1987). It forms extensive beds in locations protected from wave action either by topography or depth (usually 10 m or more). *Cinetorhynchus hawaiiensis* inhabits spaces in dead coral at the bases of the colonies. By rough visual estimate, it occurs on the O'ahu sites at a density of 2–3 individuals per square meter, along with the slightly more abundant hippolytid shrimp, *Saron marmoratus* (Olivier, 1811). At west Hawai'i sites *C. hawaiiensis* was the predominant shrimp in its habitat, with roughly estimated population densities of up to a dozen or more per square meter, density peaking at about depths of 15 meter. Habitat in west Hawai'i was usually shared with occasional specimens of *C. concolor* and *C. hendersoni,* as well as *S. marmoratus*, although none were as abundant as *C. hawaiiensis*. None of the shrimps in west Hawai'i approached *C. hawaiiensis* in abundance except in the following case: At Keahou Bay, Hawai'i, *C. hendersoni* was predominant at depths of approximately 5 meters or less in holes and crevices in massive moundlike heads of *Porites lobata* Dana, 1846, another common Hawaiian coral. At these depths, *P. compressa* was absent. As depth increased, *P. compressa* replaced *P. lobata* and *C. hawaiiensis* replaced *C. hendersoni.*

Sparse population of *C. hawaiiensis* were also observed in silty dead coral along the side of the boat channel between the Ala Wai Yacht Basin and Ala Moana Beach Park, Honolulu. Other protected locations in Hawai'i undoubtedly contain additional populations of this apparently common shrimp. *Cinetorhynchus hawaiiensis* was never observed along exposed rocky coastlines where *C. hiatti* (Holthuis and Hayashi, 1967) and *R. rathbunae* predominate.

Like other members of its genus, *C. hawaiiensis* emerges only at night. It seldom strays far from cover and is typically observed perched motionless just inside openings in the coral.

Comparison. *Cinetorhynchus hawaiiensis* closely resembles *C. reticulatus.* Both have ambulatory dactyli armed with three cornified spines posterior to the largest terminal unguis, an antennular peduncle armed ventrally with a single spine and the distolateral spine of the scaphocerite overreaching the tip of the lamella, and no coxal projections on the first and third pereiopods. In morpholo-

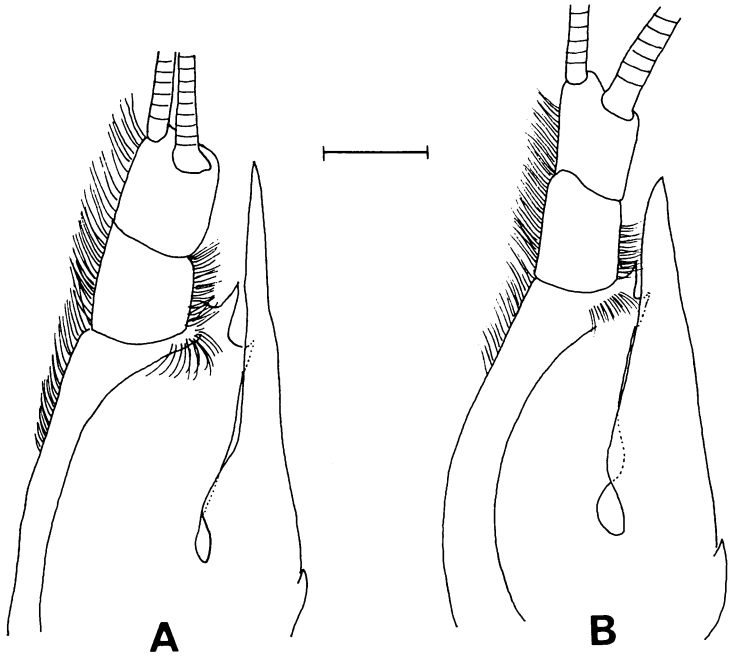

Fig. 5. Comparison of the length of stylocerite. A, *Cinetorhynchus hawaiiensis* sp. nov., holotype male (BPBM S11356, 6.6 mm CL); B, *C. reticulatus*, male (RMNH D47806, 7.3 mm CL). Scale: 1 mm.

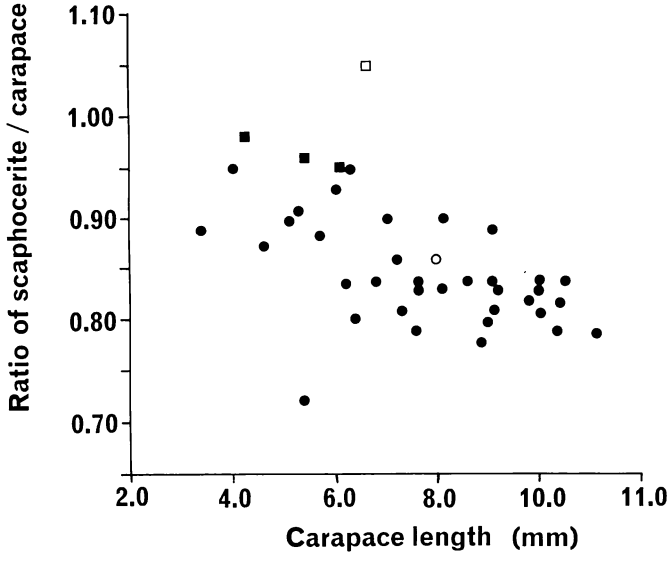

Fig. 6. Comparative ratios of carapace length versus length of scaphocerite of *Cinetorhynchus hawaiiensis* sp. nov. (squares) and *C. reticulatus* (circles). Open circle and square, holotypes; filled, paratypes and other materials.

gy, two minor characters separate these two species. In *C. hawaiiensis*, the stylocerite reaches the base of the upper antennular flagellum (Fig. 5A), whereas in *C. reticulatus* it reaches the level of the proximal third of the antennular terminal segment (Fig. 5B). Also, the length of the scaphocerite is 0.95–1.05 times as long as the carapace in *C. hawaiiensis*, instead of 0.74–0.95 (usually 0.79–0.90) in *C. reticulatus* (Fig. 6). It should be noted

that although the posteroventral angle of the fourth abdominal somite is armed with a distinct protrusion in *C. hawaiiensis*, and this character is absent in the figure of *C. reticulatus* presented in Okuno (1997), subsequent examination has revealed an intraspecific variation in *C. reticulatus*: the fourth abdominal somite may be unarmed or armed with a very small protrusion. This character, therefore, is unavailable to separate *C. hawaiiensis* from *C. reticulatus*. Two color characters easily distinguish one species from the other: *C. hawaiiensis* has a distinct dark spot on the lateral junction of the second and third abdominal somites (persisting in preserved specimens) and it completely lacks the red and white reticulations present on the abdominal somites of *C. reticulatus* (Fig. 4). Pattern of lines and spots in the rhynchocinetid shrimps has proved to be the most consistent and conspicuous diagnostic character (Okuno, 1997). We consider, therefore, the Hawaiian species to be distinct from *C. reticulatus* as specific level. Because of their close similarity, *C. hawaiiensis* and *C. reticulatus* can be considered a cryptic species pair in decapod crustaceans, as discussed by Knowlton (1986).

As is the case with *C. hendersoni* and *C. reticulatus*, the mature male of *C. hawaiiensis* develops subchelate first pereiopods.

Extensions of Range

Cinetorhynchus concolor (Okuno, 1994)

Restricted synonymy.

Rhynchocinetes concolor Okuno, 1994: 66, figs. 1–2, 3A, 4A–D.

Cinetorhynchus concolor. — Okuno, 1997: 43, fig. 6, pl. 1D.

Material Examined. Hawaiian Islands. 1 female (CBM-ZC 3695, 11.1 mm CL) and 1 ovigerous female (BPBM S11358, 9.9 mm CL), Makaha, O'ahu, 5 m depth, June 21, 1997, coll. J. Earle and J. P. Hoover.

Distribution. Type locality: Aka-jima Islet, Ryukyu Islands, southern Japan. Also known from Timor Sea, Australia, Papua New Guinea, Loyalty Islands and New Caledonia.

Remarks. Morphology and coloration of the Hawaiian specimens show no significant differences from previous descriptions. This is the first record of the species in the central Pacific.

Cinetorhynchus hendersoni (Kemp, 1925)

Restricted synonymy.

Rhynchocinetes hendersoni Kemp, 1925: 265, figs. 3–5, 7.

Cinetorhynchus hendersoni.— Okuno, 1997: 46, figs. 9, 12D–F, pl. 1F.

Material Examined. Northern Red Sea. 1 male (RMNH D47814, 11.0 mm CL), Et Tur, Sinai coast of Gulf of Suez, Egypt, September 9–12, 1968; 3 males and 5 ovigerous females (RMNH D47813, 5.0–8.6 mm CL), Manta Cliff between Landing Bay and Ras Papenfuss, 0–5 m depth, April 7, 1962.

Distribution. Type locality: Gulf of Manaar, Indian Ocean. Previously known from Zanzibar, Singapore, southern Japan, Marshall Islands, Australia, Loyalty Islands, New Caledonia, Tonga, Line Islands, Austral Islands and Hawaiian Islands.

Remarks. All specimens closely conform to previous descriptions. *Cinetorhynchus hendersoni* has been also collected from the coast of Colombia, the eastern Pacific (Okuno, unpublished).

Cinetorhynchus reticulatus Okuno, 1997

(Figs. 4C, 5B)

Restricted synonymy.

Cinetorhynchus reticulatus Okuno, 1997: 49, figs. 10, 11, 12A–C, pl. 1G, H.

Material Examined. Indonesia. 1 male (RMNH D47803, 8.4 mm CL) and 1 female (RMNH D47804, 6.0 mm CL), Spermonde Archipelago, Sulawesi, 15 m depth, June 30, 1994.

Northern Red Sea. 2 males, 1 ovigerous female and 1 female (RMNH D47811, 3.4–6.4 mm CL), 1 male (RMNH D47805, 9.2 mm CL) and 1 ovigerous female (RMNH D47812, 7.6 mm CL), Wesset, Sinai coast of Gulf of Aqaba, October 6–8, 1968, coll. L. Fishelson; 1 male (RMNH D47806, 7.3 mm CL), Eilat, Gulf of Aqaba, 2 m depth, December 20, 1968, coll. D. Popper; 1 male (RMNH D47809, 4.6 mm CL), same locality as RMNH NS 5073, June 10, 1964, coll. C. Lewinsohn; 1 male (RMNH D 47807, 10.0 mm CL), Dahab, Sinai coast of Gulf of Aqaba, 3 m depth, October 10, 1968, coll. L. Fishelson; 1 female (RMNH D47808, 4.0 mm CL), Marsa-el-At, Sinai coast of Gulf

Table 2. The Indo-West Pacific distributions of *Cinetorhynchus* species. Letters indicate the zoogeographical zone illustrated in fig. 1 proposed by Bruce (1990). A, Red Sea; B, East Africa; C, Southern Arabia, Arabian Gulf, Gulf of Oman; D, Madagascar, Comoro, Mascarene and Seychelle Islands; E, Western Indian Peninsula, Maldive, Lacadive and Chagos Islands; F, Sri Lanka, Bay of Bengal, Andaman and Nicobar Islands, Myanmar; G. Malaya, South China Sea, Taiwan, Philippines; H, Indonesia; I, Australia; J, east China, Japan, Ryukyu Islands, Korea; K, Marshall, Caroline and Mariana Islands; L, Papua New Guinea; M, New Caledonia, Fiji, Vanuatu, Tonga, Kiribati, Tuvalu, Samoan and Phoenix Islands; N, Tokelau, Cook, Line, Society, Austral, Tuamotu and Marquesas Islands; O, Hawaiian Islands. Open circles, present study; filled, after Kemp (1925), Okuno (1997), Okuno and Tachikawa (1997).

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
C. concolor (Okuno)									●	●		●	●		○
C. erythrostictus Okuno										●			●		
C. fasciatus Okuno & Tachikawa											●				●
C. hawaiiensis sp. nov.															○
C. hendersoni (Kemp)	○	●				●		●	●	●	●		●	●	●
C. hiatti (Holthuis & Hayashi)							●			●	●		●	●	●
C. reticulatus Okuno	○	●						○	●	●	●	●	●	●	
C. striatus (Nomura & Hayashi)							●			●			●		

of Aqaba, October 10, 1954, coll. C. Lewinsohn; 1 male (RMNH D47810, 9.0 mm CL), Ras Muhammad, south point of Sinai Peninsula, September 26–28, 1969.

Distribution. Type locality: Banya Islet, Loyalty Islands. Also known from Zanzibar, Timor Sea, southern Japan, Mariana Islands, Papua New Guinea, Australia, New Caledonia, Western Samoa and Marquesas Islands.

Remarks. Three male and two female specimens (one ovigerous) from the northern Red Sea have 7–8 meral spines on outer surface of the third pereiopod. The range of frequency distribution of the character was extended from previous data.

Discussion

Areas well sampled for *Cinetorhynchus* species include the Hawaiian Islands, New Caledonia and southern Japan, but most other areas remain poorly known in this regard (Table 2). In spite of these gaps, we consider it likely that the Hawaiian *Cinetorhynchus* fauna will prove to be most closely related to those of New Caledonia and southern Japan. Although the Hawaiian Islands are a center of endemism, at least 55% of all Hawaiian marine invertebrates are also found in the Indo-West Pacific faunal region and additional 14% extended to the eastern Pacific or are circumtropical (Kay and Palumbi, 1987). The distribution of Hawaiian *Cinetorhynchus* shrimps is consistent with this pattern.

The geographical distribution of *C. hawaiiensis* differs from that of *C. reticulatus*. The former is known at present only from the Hawaiian Islands whereas the latter has a wide Indo-West Pacific distribution (Table 2). Given the isolation of the Hawaiian chain and the high rate of endemism of its fauna, a strong possibility exists that *C. hawaiiensis* and *C. reticulatus* are closely related. An isolated Hawaiian population of the latter could have changed genetically over time giving rise to the present species, *C. hawaiiensis*; or both could have diverged from common stock. If either is the case, *C. hawaiiensis* and *C. reticulatus* would form a sibling rather than a cryptic species pair.

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アカモンサラサエビ属の隠蔽種, *Cinetorhynchus hawaiiensis* sp. nov. の記載と同属3種の新産地 (甲殻綱, エビ目, サラサエビ科)

奥野淳兒[1)]・John P. Hoover[2)]

[1)]千葉県立中央博物館
〒260–8682 千葉市中央区青葉町 955–2
[2)]Hawaii Medical Library
1221 Punchbowl Street, Honolulu,
HI 96813, U. S. A.

ハワイ諸島より採集された4個体に基づいてサラサエビ科アカモンサラサエビ属の1新種, *Cinetorhynchus hawaiiensis* を記載する. 本種はインド・西太平洋に広く分布する *C. reticulatus* Okuno, 1997 に酷似するが, 第1触角柄部の触角棘の長さ, および頭胸甲長と第2触角の触角鱗長の比率が異なる. 両種は生時の色彩では明瞭に区別されることから, Knowlton (1986) の定義に従えば隠蔽種の関係になるものと考えられる. また, ヒボタンサラサエビ *C. concolor* (Okuno, 1994) をハワイ諸島から, サンゴサラサエビ *C. hendersoni* (Kemp, 1925) を紅海北部から, ならびに *C. reticulatus* をインドネシアと紅海北部からそれぞれの新産地として記録する.